62. An isolated polypeptide encoded by a nucleic acid molecule having a nucleotide sequence encoding a polypeptide having the amino acid sequence as set forth in SEQ ID NO: 5 with at least one modification that is a conservative amino acid substitution, C-terminal truncation, or N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in SEQ ID NO: 5.

Please cancel claims 17 and 37-39 without prejudice or disclaimer.

REMARKS

The Examiner indicated that claims 9, 13-17, 37-42, 46, and 47 were pending at the issuance of the instant Office Action. Claims 9 and 13-16 have been amended and new claims 57-62 have been added. Claims 17 and 37-39 have been canceled. The amendments to the claims and new claims are fully supported by the specification. No new matter has been added as a result of the above-described amendments. The rejections set forth in the Office Action have been overcome by amendment or are traversed by argument below.

1. Supplemental Declaration

Pursuant to 37 C.F.R. § 1.67(a), Applicants submit an executed copy of their Supplemental Declaration claiming the benefit of priority under 35 U.S.C. § 120 from U.S. Application Serial No. 09/599,087, filed June 21, 2000, and acknowledging Applicants' duty to disclose all information known by Applicants to be material to patentability which became available between the filing date of the prior application and the national filing date of the present application.

2. Objection to claim 39 under 37 C.F.R. § 1.75(c)

The Office Action contains an objection to claim 39 under 37 C.F.R. § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicants have canceled claim 39 without prejudice or disclaimer, rendering this objection moot.

3. Objection to claims 9, 13-17, 37-42, 46, and 47

The Office Action contains an objection to claims 9, 13-17, 37-42, 46, and 47 as being drawn

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in the alternative to a non-elected invention. Applicants have amended claims 9, 13-17, 37-42, 46, and 47 to recite only the elected invention.

4. Rejections of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph

The Office Action contains a rejection of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph, as not being enabling for an isolated polypeptide comprising an amino acid sequence which is at least about 70% identical to the amino acid sequence set forth in SEQ ID NO: 5. The Examiner takes the position that, given the broadest reasonable interpretation, the breadth of the claims in the present application encompasses any and all isolated polypeptides. Applicants respectfully contend that since the claims of the present application are drawn to polypeptides that must be at least about 70% identical to the polypeptide set forth in SEQ ID NO: 5, and possess an activity of the polypeptide set forth in SEQ ID NO: 5, the breadth of the claims does not encompass any and all isolated polypeptides. Many isolated polypeptides share less than 70% amino acid sequence identity to the polypeptide set forth in SEQ ID NO: 5, or lack an activity of the polypeptide set forth in SEQ ID NO: 5. Nevertheless, in an effort to expedite prosecution of the pending claims to allowance, Applicants have amended the claims to recite polypeptides having the amino acid sequence as set forth in SEQ ID NO. 5, or having conservative substitutions or N- or C-terminal truncations of said sequence. Applicants, having deleted the objected-to limitation of "at least about 70% identical" from the pending claims, respectfully contend that this ground of rejection has been overcome. Withdrawal of this rejection is respectfully solicited.

The Examiner also takes the position that since the introduction of a particular amino acid substitution in a polypeptide variant may affect the structure or function of that polypeptide variant, one with skill in the art cannot make and use the claimed invention without undue experimentation. However, as the Examiner notes, Bowie *et al.* teach that even regions critical to the three-dimensional structure/function relationship can tolerate conservative substitutions. Applicants have amended the pending claims to recite sequence variants of explicitly-disclosed SEQ ID NO. 5 comprising conservative substitutions. As supported by the Bowie *et al.* reference cited by the Examiner, provision of particular species of these types of substitutions do not entail undue experimentation, since one of ordinary skill in the art would expect that the purportedly critical

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structure/activity relationships would be retained in such species. Applicants respectfully submit that the claims as amended fulfill the requirements of 35 U.S.C. § 112, first paragraph, and request that the Examiner withdraw this ground of rejection.

5. Rejections of claims 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph

The Office Action contains a rejection of claims 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention. The Examiner takes the position that the specification cannot be extrapolated to enable claims drawn to a pharmaceutical composition comprising a Secs-1 polypeptide, fragment, or derivative thereof. In order to expedite prosecution of the instant application, Applicants have canceled claims 37-39 without prejudice or disclaimer, rendering this rejection moot. This amendment has been made solely to expedite prosecution and was not made to overcome prior art.

The Examiner also takes the position that because the specification teaches that derivatized or fusion polypeptides comprising an amino acid sequence that is at least 70% identical to the amino acid sequence set forth in SEQ ID NO: 5 can be used therapeutically, claims 40-42, 46, and 47 are encompassed by the claims drawn to a pharmaceutical composition. Applicants, however, note that the specification also teaches that a Secs-1 fusion polypeptide may be fused to, for example, an epitope to allow for the detection and/or isolation of a Secs-1 fusion polypeptide (page 26, lines 13-15). Furthermore, Applicants note that the specification teaches that Secs-1 polypeptide derivatives may prepared by chemically coupling a Secs-1 polypeptide to, for example, biotin (page 57, lines 1-3), allowing for the isolation of a Secs-1 polypeptide. These examples of explicit teachings in the specification, coupled with Applicants' amendments removing species having at least 70% sequence identity to explicitly-disclosed SEQ ID NO. 5, provide sufficient teachings to enable practice of the invention encompassed by the pending claims without undue experimentation. Applicants respectfully contend that the amended claims fulfill the requirements of 35 U.S.C. § 112, first paragraph, and request that the Examiner withdraw this ground of rejection.

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6. Rejections of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph

The Office Action contains a rejection of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner takes the position that the disclosure of the amino acid sequences set forth in SEQ ID NO: 2 and SEQ ID NO: 5 does not reasonably convey to one skilled in the relevant art that the inventors had possession of Secs-1 polypeptides comprising an allelic variant or splice variant of the amino acid sequence of SEQ ID NO: 5. Applicants have amended the pending claims without prejudice or disclaimer, rendering this rejection moot.

7. Rejections of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, second paragraph

The Office Action contains a rejection of claims 9, 14-17, 37-42, 46, and 47 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner takes the position that claims 9, 14-17, 37-42, 46, and 47 are vague and indefinite because claims 2, 3 (from which claim 9 depends), and 14-16 recite the phrase "has an activity." Applicants contend, however, that claims containing this limitation encompass only those Secs-1 polypeptide variants that possess an inherent activity of the polypeptide as set forth in SEQ ID NO: 5. In view of the inherency of activity that resides in polypeptides having the amino acid sequence as set forth in SEQ ID NO. 5, Applicants respectfully contend that the term is not indefinite and that the claims fulfills the requirements of 35 U.S.C. § 112, second paragraph.

The Examiner also takes the position that claims 9, 13, 16, 37-42, 46, and 47 are indefinite because claims 1-3 (from which claim 9 depends) and 13 recite the phrase "the DNA insert in ATCC Deposit Nos. PTA-1753 and PTA-1755." Applicants have amended claims 9, 13-17, 37-42, 46, and 47 to recite only the elected invention, rendering this rejection moot.

The Examiner also takes the position that claims 9 and 16 are indefinite because claim 1 (from which claims 9 and 16 depend) recites the phrase "hybridizes under moderately or highly stringent conditions." While Applicants note that the specification defines the meaning of the terms

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"moderately stringent conditions" (page 18, lines 8-14) and "highly stringent conditions" (page 17, lines 3-10), and provides examples of each, Applicants have amended the pending claims without prejudice or disclaimer in an effort to expedite the present application to allowance.

The Examiner also takes the position that claim 17 is indefinite for failing to identify the algorithm and software by the version and the date of the version. Applicants have canceled claim 17 without prejudice or disclaimer, rendering this rejection moot.

Applicants respectfully contend that rejections based on 35 U.S.C. § 112, second paragraph, have been overcome by amendment, traversed by argument, or mooted by cancellation of the rejected claims, and request that the Examiner withdraw all rejections made on this basis.

8. Rejections of claims 9 and 13-17 under 35 U.S.C. § 102

The Office Action contains a rejection of claims 9, 13, 14, 16, and 17 under 35 U.S.C. § 102, as being anticipated by the FAPESP/LICR Human Cancer Genome Project (GenBank EST Database Accession No. AW351839), contending that the FAPESP/LICR Human Cancer Genome Project teach a polypeptide that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5. The Office Action also contains a rejection of claims 9 and 14-17 under 35 U.S.C. § 102, as being anticipated by Hillier *et al.* (GenBank EST database Accession No. AA422178), contending that Hillier *et al.* teach a polypeptide that is 100% identical to the amino acid sequence set forth in SEQ ID NO: 5 over the region spanning from the amino acid at position 1 to the amino acid at position 76. Applicants traverse these rejections.

Although GenBank Accession No. AW351839 discloses an EST sequence of 356 bp derived from the FAPESP/LICR Human Cancer Genome Project, it does not teach the amino acid sequence of Secs-1 polypeptide. Likewise, GenBank Accession No. AA422178 discloses an EST sequence of 503 bp, but does not teach the amino acid sequence of Secs-1 polypeptide. Since each of the disclosed prior art sequences possesses more than one open reading frame of greater than 25 residues, but contain no teachings regarding which open reading frame encodes protein, the reference does not disclose SEQ ID NO. 5 to one of ordinary skill in the art. The existence of multiple open reading frames and the complete absence of any disclosure as to which of the open reading frames, if any, encode the actual protein, precludes these references from disclosing each and every limitation

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of the claimed invention, which is required for prior art to anticipate under 35 U.S.C. § 102. Furthermore, since both the FAPESP/LICR Human Cancer Genome Project and Hillier *et al.* disclose EST sequences, one with ordinary skill in the art would be unable to determine whether the disclosed EST sequences encode a full-length polypeptide. As shown herein, neither the FAPESP/LICR Human Cancer Genome Project nor Hillier *et al.* anticipate the claimed Secs-1 polypeptides of the present application. Applicants therefore respectfully request the Examiner to withdraw rejection of claims 9 and 13-17 on 35 U.S.C. § 102 grounds.

9. Rejections of claims 9, 13, 14-17, and 46 under 35 U.S.C. § 103(a)

The Office Action contains a rejection of claims 9, 13, 14, 16, 17, and 46 under 35 U.S.C. § 103(a), as being unpatentable over the FAPESP/LICR Human Cancer Genome Project (GenBank EST Database Accession No. AW351839). The Examiner takes the position that it would have been *prima facie* obvious to one of ordinary skill in the art, at the time the invention was made, to modify the nucleic acid molecule of the FAPESP/LICR Human Cancer Genome Project so that the modified nucleic acid molecule would encode a fusion polypeptide. The Office Action also contains a rejection of claims 9, 14-17, and 46 under 35 U.S.C. § 103(a), as being unpatentable over Hillier *et al.* (GenBank EST database Accession No. AA422178). The Examiner takes the position that it would have been *prima facie* obvious to one of ordinary skill in the art, at the time the invention was made, to modify the nucleic acid molecule of Hillier *et al.* so that the modified nucleic acid molecule would encode a fusion polypeptide. Applicants traverse these rejections.

As discussed in paragraph 7 above, neither the FAPESP/LICR Human Cancer Genome Project nor Hillier *et al.* teach the amino acid sequence of Secs-1 polypeptide. Thus, one of ordinary skill in the art would be unable to modify the nucleic acid molecules disclosed in the FAPESP/LICR Human Cancer Genome Project nor Hillier *et al* so that the modified nucleic acid molecule would encode a Secs-1fusion polypeptide. The Office Action identifies no teaching in the art to be combined with these references that would cure these deficiencies. Therefore, Applicants respectfully contend that the claims are not obvious under 35 U.S.C. § 103, and request the Examiner withdraw these rejections.

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CONCLUSIONS

Applicants respectfully contend that all conditions of patentability are met in the pending claims as amended. Allowance of the claims is thereby respectfully solicited. If Examiner Rawlings believes it to be helpful, he is invited to contact the undersigned representative by telephone at (312) 913-0001.

Respectfully submitted,
McDonnell Boehnen Hulbert & Berghoff

Dated: January 16, 2002

By: _____
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AMENDMENTS TO THE CLAIMS

Marked Up Versions of Amended Claims under 37 C.F.R. 1.121(c)(1)(ii)

9. (Amended) A polypeptide produced by ~~the~~a process ~~of Claim 8~~comprising:

(a) culturing a host cell containing a vector comprising a nucleic acid having a nucleotide sequence

(i) as set forth in SEQ ID NO. 4;

(ii) of the DNA insert in ATCC Deposit No. PTA-1775; or

(iii) that encodes a polypeptide having an amino acid sequence as set forth in SEQ ID NO. 5;

under conditions suitable to express the polypeptide; and optionally

(b) isolating the polypeptide from the culture.

13. (Amended) An isolated polypeptide comprising ~~the amino acid sequence selected from the group consisting of~~:

(a) the amino acid sequence as set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5; ~~and~~or

(b) the amino acid sequence encoded by the DNA insert in ATCC Deposit Nos. ~~PTA-1753 and~~ PTA-1755.

14. (Amended) An isolated polypeptide comprising ~~the amino acid sequence selected from the group consisting of~~:

(a) the amino acid sequence as set forth in ~~either SEQ ID NO: 3 or~~ SEQ ID NO: 6, optionally further comprising an amino-terminal methionine;

(b) an amino acid sequence for an ortholog of ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5; or

~~(c) an amino acid sequence which is at least about 70 percent identical to the amino acid sequence of either SEQ ID NO: 2 or SEQ ID NO: 5, wherein the polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

~~(d)~~(c) a fragment of the amino acid sequence set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5 comprising at least about 25 amino acid residues, wherein the fragment has an activity of the polypeptide set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5, or is antigenic~~; and~~

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~~(e) an amino acid sequence for an allelic variant or splice variant of the amino acid sequence as set forth in either SEQ ID NO: 2 or SEQ ID NO: 5, the amino acid sequence encoded by the DNA insert in ATCC Deposit Nos. PTA-1753 and PTA-1755, or any of (a) - (c).~~

15. (Amended) An isolated polypeptide comprising ~~the amino acid sequence selected from the group consisting of~~:

~~(a) the amino acid sequence as set forth in either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one conservative amino acid substitution, wherein the polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

~~(b) the amino acid sequence as set forth in either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one amino acid insertion, wherein the polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

~~(c) the amino acid sequence as set forth in either SEQ ID NO: 2 or SEQ ID NO: 5 with at least one amino acid deletion, wherein the polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5;~~

~~(d) the amino acid sequence as set forth in either SEQ ID NO: 2 or SEQ ID NO: 5 which has a C- and/or N- terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in either SEQ ID NO: 2 or SEQ ID NO: 5; and~~

~~(e)~~ the amino acid sequence as set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5 with at least one modification ~~selected from the group consisting of~~ that is a conservative amino acid substitutions, ~~amino acid insertions, amino acid deletions,~~ C-terminal truncation, ~~and~~or N-terminal truncation, wherein the polypeptide has an activity of the polypeptide set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5.

16. (Amended) An isolated polypeptide encoded by ~~the~~a nucleic acid molecule ~~of any of Claims 1, 2, or 3,~~comprising:

(a) the nucleotide sequence as set forth in SEQ ID NO: 4;

(b) the nucleotide sequence of the DNA insert in ATCC Deposit No. PTA-1755; or

(c) a nucleotide sequence encoding the polypeptide as set forth in SEQ ID NO: 5;

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wherein the polypeptide has an activity of the polypeptide set forth in ~~either SEQ ID NO: 2 or~~ SEQ ID NO: 5.

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